

80. The reader of claim 39, wherein said at least one light source is a leaded LED.

81. The reader of claim 39, wherein said at least one light source is a leaded LED having leads extending through said common circuit board.

82. The reader of claim 39, further comprising a frame including a retainer for receiving a lens assembly.

### REMARKS

Although the Examiner has conceded now that the cited prior art fails to anticipate any claim of the application, the Examiner persists in rejecting all of the claims. Claims 1, 3-19, 39-74 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,821,513 to O'Hagan (O'Hagan) in view of the what is asserted to be "well known prior art" by the Examiner. The Examiner has withdrawn his previous rejections of claims 1-3, 5-12, 15-16, 39-41, 43-50, and 53-54 under 35 U.S.C. 102(e) and has admitted that every pending claim in the application is novel over the cited prior art. The Examiner will note that certain limitation of claims 1 and 39 have been removed.

Applicants strongly disagree with the Examiner's rejections. The Examiner has failed to establish a prima facie case of obviousness as to any of the rejected claims. The Examiner has failed to consider specifically recited limitations of certain of the claims. Applicants believe that all of the rejections should be withdrawn.

Regarding independent claim 1, independent claim 1 is directed to an imaging module having an image sensor, a light source for illuminating at least part of a target area, and a common circuit board. According to the claimed invention the common circuit board carries both of the image sensor and the light source. Claim 39 includes all of the limitations of claim 1, plus the additional limitation of a reader having a housing, wherein the recited imaging module is incorporated in the reader housing.

By contrast, as the Examiner admits, O'Hagan teaches an imaging module having an image sensor and several light sources, wherein the light sources and images sensor are not,

and not suggested to be carried by a common circuit board. The O'Hagan module includes aiming light sources and illumination light sources, and an image sensor. The image sensor is carried by a first circuit board. The illumination lights sources are carried by a separate circuit board spaced apart from the circuit board carrying the image-sensor. The aiming light sources of O'Hagan are not carried by a circuit board at all. They are carried by LED holders. Applicants submit that O'Hagan is nothing more than an example of a type of optical reader which the applicants discuss in the Background: "Currently available optical readers include illumination elements...image capture...that are carried by more than one circuit board. For example, shown in U.S. Patent No. 5, 780, 834 is an optical reader having numerous circuit boards, including an LED board for carrying LED'S, an "imaging board" carrying an image sensor..." (Background, page 1, lines 9-14)

According to MPEP 2143, three basic criteria must be met to establish a *prima facie* case of obviousness. First there must be suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in the applicants' disclosure. *In re Vaeck*, 947 F2D 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The Examiner's rejection of claim 1 and 39 fails to establish *prima facie* obviousness. Here is a complete statement of the Examiner's rejection of claim 1 and 39, in which the Examiner references a "rearrangement of parts" type obviousness rejected discussed in MPEP 2144.04:

... rearrangement of parts, mounting multiple elements on a single circuit board is old and well known. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to mount all the elements of O'Hagan on a single circuit board in order to accommodate for alternative packaging and housing details dictated by the environment in which the apparatus is to be used (October 7, 2002 Office Action).

Applicants have tried, but fail to understand how the above statement constitutes an

establishing that a skilled artisan would be motivated to modify O'Hagan so that O'Hagan includes a common circuit board carrying both an image sensor and a light source. The Examiner merely issues the conclusive remark that "mounting multiple elements on a single circuit board is old and well known." The Examiner provides no evidence from O'Hagan or any other piece of prior art to support his conclusive remark. If the Examiner is so sure of his position that the skilled artisan would be motivated to modify O'Hagan in accordance with the claimed invention, why can't the Examiner point to any teaching in O'Hagan which would support the position that the skilled artisan would be motivated to take light sources of O'Hagan and mount them on the circuit board carrying the O'Hagan image sensor.

The Examiner's tendency to genericize applicants claims and then to apply rejections to the genericized, rather than actual elements of Applicants' claims, is noted. The Examiner, in his rejection of independent claims 1 and 39 states that "mounting *multiple elements* on a single circuit board is old and well known" (emphasis added). However, applicants claims do not recite merely mounting "multiple elements" on a circuit board. Applicants recite *certain and specific* elements commonly carried by a common circuit board. Namely, applicants recite that the specific element of at least one light source, and the other specific element of an image sensor commonly carried by a common circuit board. That the Examiner found it necessary to convert claims 1 and 39 into a genericized, more easily rejected versions of themselves, before applying art to claims 1 and 39, is taken by the applicants as an admission that the Examiner considered the task of formulating a rejection as to the actual combination of elements recited in claims 1 and 39 too difficult to undertake.

If the Examiner wishes to maintain his rejection of claim 1 based on O'Hagan and this vague "well known" art the Examiner alludes to, he is respectfully requested to point out specific teaching of the prior art which evidence that one would be motivated to modify O'Hagan. The Examiner is further respectfully requested to consider the actually claimed elements of claim 1, rather than a genericized version of claim 1, genericized for purposes of rendering application of art to claim 1 easier. Still further, the Examiner is respectfully requested to provide actual evidence of this "well known" art the Examiner refers to in rejecting claim 1. Presumably if the art to which the Examiner refers is "well known" it

would be easy to provide evidence of such art.

It is bad enough that the Examiner, without any art to rely upon, has resorted to a conclusive recitation of the "rearrangement of parts" rejection in rejecting claims 1 and 39. What is even worse is that the Examiner does not even apply the weak "rearrangement of parts" rejection to the actual terms recited in claim 1. As indicated above the Examiner has reformed claims 1 and 39 into a more easily examined form (by characteristic the recited light source and image sensor elements as nothing more than "multiple elements") and then has applied the "rearrangement of parts" rejection to the reformed versions of claims 1 and 39.

As far as the applicants can tell, the Board of Patent appeals has never upheld an Examiner's "rearrangement of parts" type rejection where the Examiner has failed to provide an explanation as to a motivation to modify a reference. The case of *Ex Parte McCrane* is illustrative.

The patent claims at issue in *Ex Parte McCrane* involved the positioning of fasteners on a protective active wear device. The Examiner in *McCrane* attempted to use the "rearrangement of parts" rejection and stated "The placement of the fasteners in any pattern or direction could readily be determined through routine experimentation based on the direction of applied forces and magnitude of adhesion desired. Note that rearranging parts of an invention involves only routine skill in the art." (1998 WL 1736165 (*Bd. Pat. App. & Interf.*)).

The Board of Patent Appeals and Interferences struck down the Examiner's rejection. Noting a lack of substance behind the Examiner's rejection, and the failure of the Examiner to consider the teachings of the prior art in making the rejection under 35 U.S.C. § 103, the Board ruled:

We will not support the Examiner's position. In rejecting claims under 35 U.S.C. § 103 the Examiner bears the initial burden of presenting a prima facie case of obviousness... If the Examiner fails to establish a case of prima facie obviousness, the rejection is improper and will be overturned ...the mere fact that the prior art could be modified would not have made the modifications obvious unless the prior art suggested the desirability of the modification....Robinson (the primary reference) shows nothing more than what the appellant on pages 2 and 3 of the specification has admitted to be old in the art... Thus, Robinson does not provide a factual basis for concluding that unidirectionality oriented hook ends mounted on first and second segments in the claimed manner would have been obvious. *Ex Parte McCrane* 1998 WL 1736165

Claims 3-19 and 40-65 are believed to be allowable at least for the reason that they depend from an allowable base claim. It is stressed, however, that claims 3-19 and claims 40-65 are allowable for reasons in addition to their dependencies on an allowable base claim. In order to demonstrate examples of certain deficiencies in the Examiner's rejections of the dependent claims 3-19 and 40-65, applicants now discuss certain of the dependent claims 3-19 and 40-65.

Claims 3 and 4 recite in addition to other elements an aiming light source carried by the common circuit board referenced in claims 1 and 39 respectively. In O'Hagan, aiming light sources 186 and 188 are not even mounted to a circuit board, much less a circuit board which also carries an image sensor and an illumination LED. They are mounted to an LED holder. If the Examiner wishes to maintain his rejection of claims 3 and 40 under 35 U.S.C. § 103(a), he is respectfully requested to explain why the skilled artisan would be motivated to remove the aiming light sources of O'Hagan from their stated position in LED holders and mounts them on the circuit board which carries the image sensor.

Claims 5 and 43 recite that the circuit board of claims 1 and 39, respectively, carry essentially all image sensor signal processing circuitry, image capture circuitry, and decoding and or recognizing circuitry. These limitations are simply not disclosed by O'Hagan. In fact, O'Hagan states that an image sensor and image processing circuitry are to be mounted on separate circuit boards. O'Hagan discloses that image sensor 170 is to be in communication with circuit board 174 and an image processor 120 is to be disposed on circuit board 146. If the Examiner wishes to maintain his rejections of claims 5 and 43 under 35 U.S.C. 103(a) he is respectfully requested why the skilled artisan, taking the teachings of O'Hagan would be motivated to change the circuit distribution of O'Hagan.

Claims 6 and 44 recite at least one aiming light source and associated optics for projecting a "solitary horizontal aiming pattern." O'Hagan's Fig. 2 clearly teaches a cross-pattern aiming pattern and not a horizontal line aiming pattern. Accordingly, O'Hagan fails to teach the horizontal line aiming pattern recited in claims 6 and 44. If the Examiner wishes to maintain his rejections of claims 6 and 44 under 35 U.S.C. § 103(a) he is respectfully requested to explain why the skilled artisan taking the teachings of O'Hagan would be

motivated to modify the aiming pattern of O'Hagan.

Claims 7-9 and 45-47 all recite the element of a one-piece frame having certain, specifically claimed elements. O'Hagan fails to teach the one piece frame as specifically recited in various forms, in claims 7-9 and 45-47. If the Examiner wishes to maintain his rejections of claims 7-9 and 45-47 under 35 U.S.C. § 103(a) he is respectfully requested why the skilled artisan taking the teachings of O'Hagan would be motivated to modify the frame of O'Hagan.

Claims 10-11 and 48-49 recite the limitation that a circuit board of the recited imaging module delimits an exterior of an imaging module. O'Hagan shows only an imaging module wherein circuit boards are entirely encapsulated by a frame. Accordingly, O'Hagan fails to teach the circuit board exterior delimiting element of claims 10-11 and 48-49. If the Examiner wishes to maintain his rejection of claims 10-11 and 48-49 under 35 U.S.C. § 103(a), he is respectfully requested to explain why the skilled artisan taking the teachings of O'Hagan would be motivated to modify the board encapsulating frame of O'Hagan.

Claims 15 and 53 recite the limitations of a pair of aiming light sources, and an aperture plate having a pair of apertured domes disposed over the light source. O'Hagan does not disclose any of these features. Notably, the Examiner does not even attempt to make the case that O'Hagan teaches applicants apertured domes of claims 15 and 53. The Examiner has completely ignored the limitations of claims 15 and 53. If the Examiner wishes to maintain his rejection of claims 15 and 53 under 35 U.S.C. § 103(a), he is respectfully requested to explain why the skilled artisan taking the teachings of O'Hagan would be motivated to modify the O'Hagan to include the limitations of claims 15 and 53.

Claims 16 and 54 recite the limitation that the frame of the recited imaging modules include a back plate having leads of an aiming LED extending there through, and that the leads are connected to the circuit board which carries an image sensor. O'Hagan teaches no such feature. In fact, in O'Hagan, the aiming LEDs do not even appear to be connected to any circuit board. If the Examiner wishes to maintain his rejection of claims 16 and 54 under 35 U.S.C. § 103(a), he is respectfully requested to explain why the skilled artisan taking the teachings of O'Hagan would be motivated to modify O'Hagan to include the limitations

recited in claims 16 and 54.

Claims 4 and 42 recite the limitations of a planar optical component and "resilient fingers" for receiving and securing a planar optical component in a frame without use adhesives or any additional mechanical securing apparatuses or agents. The Examiner has cited U.S. Patent No. 4,092,698 to Brefka as evidence that the invention of claims 4 and 42 is obvious over O'Hagan as modified by well known prior art. However, Applicants believe that the recitation of Brefka as a primary support for the Official Notice rejection constitutes evidence of the nonobviousness rather than evidence of obviousness of claims 4 and 42. As mentioned, claims 3-19 and 40-65 are allowable at least for the reason that they depend from an allowable base claim. Claims 4 and 42 are also independently allowable. Claims 4 and 42 recite resilient fingers for receiving and securing a planar optical component. As indicated above a requirement for establishing a case of prima facies obviousness is that the references or references (when combined ) teach or suggest all of the claim limitations. The combination of O'Hagan with the official notice that the Examiner supports by citing Brefka (which teaches a circuit board mounting apparatus) does not yield any of at least the following elements: (1) a light source illuminating at least part of a target carried by a common circuit board (2) an image sensor carried by a common circuit board, or (3) resilient fingers receiving an optical component.

Claims 13-14 and 51-52 recite the feature of a back plate having a center recess. There is no suggestion either in O'Hagan or in any of the other references for such a feature. If the Examiner wishes to maintain his rejection of claims 12-14 and 51-52 under 35 U.S.C. § 103(a), he is respectfully requested to explain why the skilled artisan taking the teachings of O'Hagan would be motivated to add a center recess into the O'Hagan module.

Claims 17-19 and claims 55-57 recite the element of an aperture plate including domes having slit apertures in combination with numerous other components. There is no suggestion in O'Hagan or in any of the other references for slit apertured domes. The Examiner does not even bother to cite any art or even use an "official notice" rejection to explain why he believes that claims 17-19 and 55-57 are obvious. As he does with several other claims, the Examiner examines claims 17-19, 55-57 as if the domes and other

limitations are not present and simply ignores the limitations. If the Examiner wishes to maintain his rejection of claims 17-19 and 55-57 under 35 U.S.C. § 103(a), he is respectfully requested to explain why the skilled artisan taking the teachings of O'Hagan would be motivated, out of nowhere, to add apertured domes into the O'Hagan module.

Regarding claims 66-74, the Examiner glosses over all of these claims. Regarding claim 66, the Examiner does not explain why it would be obvious to incorporate resilient fingers formed in sidewalls of a frame of O'Hagan for receiving and securing a planar optical member carrying at least one optical component. If the Examiner wishes to maintain his rejection of claims 66-74 under 35 U.S.C. § 103(a), he is respectfully requested to explain why the skilled artisan taking the teachings of O'Hagan would be motivated to modify the elements of resilient fingers holding a planar optical member into O'Hagan.

Regarding claims 68-71, claims 68-71 specifically recite the element of a one-piece frame including a lens assembly retainer section and top and side sidewalls. O'Hagan is totally devoid of a one-piece frame having the features recited in claims 68-71. If the Examiner wishes to maintain his rejection of claims under 35 U.S.C. § 103(a), he is respectfully requested to explain why the skilled artisan taking the teachings of O'Hagan would be motivated to modify O'Hagan to include a one-piece frame having a retainer section and top and side sidewalls.

Regarding claims 72-74, claims 72-74 recite an apertured opaque dome. If the Examiner wishes to maintain his rejection of claims 68-71 under 35 U.S.C. § 103(a), he is respectfully requested to explain why the skilled artisan taking the teachings of O'Hagan would be motivated, out of nowhere, to add apertured domes into the O'Hagan module.

Regarding the statement of the Examiner that the Examiner had provided (in the answer of January 31, 2002) "specific reasoning" why one would choose the claimed design, the applicants strongly disagree. The Examiner's "design choice" rejection in the answer of January 31, 2002 consisted entirely of the following statement:

Mounting "fingers" are old and well known, as are "recesses" and alignment means in electronic equipment enclosing circuit boards. It would have been Obvious to a person of ordinary skill in the art at the time the invention was made to mount the board of O'Hagan using mounting "fingers" and to provide "recesses" for alignment in the housing of "O'Hagan". This would be a matter



of design choice, possibly chosen for a more economically and efficiently packaged system.

The explanation that skilled artisans would be motivated to modify O'Hagan in accordance with the claimed invention since the artisans want to make "a more economically and efficiently packaged system" cannot be taken seriously as a "specific reasoning" as to motivation to modify. It is noted that O'Hagan himself presumably was motivated to make an economical and efficiently packaged module yet arrived at a module design radically different from the one claimed by the applicants. Further, it is noted that, while the Examiner steadfastly maintains that one would be motivated to modify O'Hagan, he avoids making any reference whatsoever to the teachings of O'Hagan to support this conclusion. The "design choice" rejection postulated by the Examiner (that the missing element is a matter of design choice chosen for efficiency) could be utilized to reject any hypothetical claim by any inventor regardless of the claim elements. If sanctioned, the Examiner's "design choice" rejection would eliminate any need to consult the teachings of the prior art altogether, and therefore cannot be considered a "specific reasoning" as to motivation to modify as argued by the Examiner.

Regarding the Examiner's recitation of U.S. Patent No. 5,793,033 to Feng (Feng) in support of the Examiner's holding of Official Notice, the applicants have tried but cannot understand the Examiner's perceived significance of Feng. The section of Feng which the Examiner cites reads:

Fig. 10 is a top view of the modular portion 20 with the upper portion 39a of the housing 40 removed. The board camera assembly 38 includes a rear printed circuit board 52 and a front printed circuit board 54, both of which are secured in housing 40 in slots 56a, 56b, 56c, and 56d (Feng, Col. 8, lines 53-56).

While the applicants recited imaging module as recited in claims 1 and 39 can have more than one circuit board it must have at least one circuit board that carries an image sensor and a light source illuminating at least part of a target area. The purportedly relevant section of Feng which the Examiner cites as the best evidence in support of his position that the claims are obvious in view of "Official Notice" teaches only a first printed circuit board carrying an image sensor and a second circuit board carrying neither of an image sensor or a

light source.

Accordingly, in view of the above amendments and remarks, Applicants believe all of the claims of the present application to be in condition for allowance and respectfully requests reconsideration and passage to allowance of the application

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

If the Examiner believes that contact with Applicants' attorney would be advantageous toward the disposition of this case, the Examiner is herein requested to call Applicants' attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to deposit Account No. 50-0289.

Respectfully submitted,

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PATENT TRADEMARK OFFICE  
315-425-9000  
315-425-9114

**"VERSION WITH MARKINGS TO SHOW CHANGES MADE."**

In the Claims:

Please amend claim 1 as follows:

1. (Twice Amended) An imaging module comprising:  
[a frame;]  
a circuit board [mounted to said frame];  
an image sensor carried by said circuit board; and  
at least one light source for illuminating at least part of a target area, wherein said at least one light source is mounted to said circuit board, whereby said circuit board carries both of said image sensor and said at least one light source.

Please amend claim 4 as follows:

4. (Amended) The imaging module of claim 1, further comprising a frame and at least one planar optical component and wherein said frame comprises sidewalls having resilient fingers formed therein for receiving and securing said optical component in said frame in a stationary position in said frame without use of adhesives or any additional mechanical securing apparatuses or agents.

Please amend claim 7 as follows:

7. (Twice Amended) The imaging module of claim 1, wherein said imaging module further includes a frame, wherein said frame is a one-piece unit defining top, bottom and side sidewalls of said module, and wherein said sidewalls and said circuit board define a cubic rectangular configuration.

Please amend claim 10 as follows:

10. (Twice Amended) The imaging module of claim 1, wherein said imaging module further includes a frame, wherein said frame includes top and side sidewalls, and wherein a

combination of said circuit board and said top and side sidewalls defines a partially enclosed contained area and delimits an exterior of said module, and wherein said at least one light source is disposed inside said contained area, whereby said at least one light source is structurally protected by a combination of said circuit board and said frame.

Please amend claim 11 as follows:

11. (Twice Amended) The imaging module of claim 1, wherein said imaging module further includes a frame, wherein said frame includes top and side sidewalls and wherein a combination of said circuit board and said top and side sidewalls defines a partially enclosed contained area and delimits an exterior of said module, and wherein said at least one light source and said image sensor are disposed inside said contained area, whereby said at least one light source and said image sensor are structurally protected by a combination of said circuit board and said frame.

Please amend claim 13 as follows:

13. (Twice Amended) The imaging module of claim 1, further including a frame, wherein said frame includes a back plate having a center recess for receiving and aligning said image sensor.

Please amend claim 14 as follows:

14. (Twice Amended) The imaging module of claim 1, further including a frame, wherein said frame includes a back plate having a center recess for receiving and aligning said image sensor and at least one side recess for accommodating electrical components emanating forwardly of said circuit board.

Please amend claim 16 as follows:

16. (Twice Amended) The imaging module of claim 1, further including a frame, wherein said frame includes a back plate, and wherein said at least one light source further includes illumination and aiming LEDs having leads extending through said back plate and

being electrically connected to said circuit board.

Please amend claim 39 as follows:

39. (Twice Amended) An optical reader for reading indicia, said optical reader comprising:

a housing; and

an imaging module disposed in said housing, said imaging module including [a frame];

a circuit board [mounted to said frame];

an image sensor carried by said circuit board; and

at least one light source for illuminating at least part of a target area outside of said housing wherein said at least one light source is mounted to said circuit board, whereby said circuit board carries both of said image sensor and said at least one light source.

Please amend claim 42 as follows:

42. (Amended) The optical reader of claim 39, further comprising a frame and at least one planar optical component,[and] wherein said frame comprises sidewalls having resilient fingers formed therein for receiving and securing said optical component in said frame in a stationary position in said frame without use of adhesives or any additional mechanical securing apparatuses or agents.

Please amend claim 45 as follows:

45. (Twice Amended) The optical reader of claim 39, further comprising a frame, wherein said frame is a one-piece unit defining top bottom and side sidewalls of said module, and wherein said sidewalls and said circuit board define a cubic rectangular configuration.

Please amend claim 46 as follows:

46. (Twice Amended) The optical reader of claim 45, further comprising a frame,

wherein said imaging module further comprises a lens assembly and wherein said frame is a one-piece unit further comprising a retainer section retaining said lens assembly.

Please amend claim 47 as follows:

47. (Twice Amended) The optical reader of claim 45, further comprising a frame, wherein said top and side sidewalls of said one-piece frame define a partially enclosed contained area, and wherein said at least one illumination source and said image sensor are disposed inside said contained area, whereby said at least one illumination source and said image sensor are structurally protected by said frame.

Please amend claim 48 as follows:

48. (Twice Amended) The optical reader of claim 39, further comprising a frame, wherein said frame includes top and side sidewalls, and wherein a combination of said circuit board and said top and side sidewalls defines a partially enclosed contained area and delimits an exterior of said module, and wherein said at least one illumination source is disposed inside said contained area, whereby said at least one illumination source is structurally protected by a combination of said circuit board and said frame.

Please amend claim 49 as follows:

49. (Twice Amended) The optical reader of claim 39, further comprising a frame, wherein said frame includes top and side sidewalls and wherein a combination of said circuit board and said top and side sidewalls defines a partially enclosed contained area and delimits an exterior of said module, and wherein said at least one source and said image sensor are disposed inside said contained area, whereby said at least one illumination source and said image sensor are structurally protected by a combination of said circuit board and said frame.

Please amend claim 51 as follows:

51. (Amended) The optical reader of claim 39, further comprising a frame, wherein said frame includes a back plate having a center recess for receiving and aligning said image

sensor.

Please amend claim 52 as follows:

52. (Amended) The optical reader of claim 39, further comprising a frame, wherein said frame includes a back plate having a center recess for receiving and aligning said image sensor and at least one side recess for accommodating electrical components extending forwardly of said circuit board.

Please amend claim 54 as follows:

54. (Amended) The optical reader of claim 39, further comprising a frame, wherein said frame includes a back plate, and wherein said at least one illumination source further includes illumination and aiming LEDs having leads extending through said back plate and being electrically connected to said circuit board.

Please amend claim 56 as follows:

56. (Amended) The optical reader of claim 55, further comprising a frame and further including means adapting said diffuser plate to be snap-fit onto said frame.

Please amend claim 57 as follows:

57. (Amended) The optical reader of claim 55, further comprising:  
a frame;  
means adapting said diffuser plate to be snap-fit onto said frame; and  
means adapting said aperture plate to be biased toward said back plate when said diffuser plate is snap-fit onto said frame.